

Remarks

This is in response to the Office Action dated April 30, 2004.

Per the above amendment, claims 1-8 have been canceled and claims 9-16 added.

Regarding the rejection of the specification under 35 U.S.C. 112, 1st paragraph, the Examiner asserts the following three examples to be unclear, inexact or verbose terms:

- 1) "being repetitively completed at a completion period"
- 2) "being repetitively completed piece by piece"; and
- 3) "completed in every unit equal to the completion unit of the error correction code".

The terms 1) and 3) appear only in the summary of the invention and the claims. Per the above amendment, the summary of the invention and the claims have been amended to remove the terms 1) and 3) therefrom.

The term 2) appears in the description of the embodiments of this invention, page 8, lines 9-10 of the specification. The specification, page 8, lines 4-11 reads as:

-- The decrypting information can be updated, for example, 30 bytes by 30 bytes. In other words, the decrypting information can be repetitively completed 30 bytes by 30 bytes. In this case, every 30-byte piece of the decrypting information is a unit. Thus, the decrypting information can be repetitively completed piece by piece. Every complete piece of the decrypting information corresponds to, for example, 30 bytes. It is respectfully submitted therefore that the meaning of "be repetitively completed piece by piece" is clear.

The term 2) also appears in the summary of the invention and the claims. Per the above amendment, the summary of the invention and the claims have been amended to remove the term 2) therefrom.

Therefore, it is respectfully submitted that amending the specification and the claims renders the rejection of the specification moot.

The features of the inventions of the new claims 9-16 are:

1) a portion of the encryption-resultant information in every prescribed data interval and a decrypting information piece for decryption of the portion of the encryption-resultant information in the prescribed data interval are combined into a combination-resultant information block, and an error correction code signal is added to the combination-resultant information block to form an error correction data block; and

2) the decrypting information pieces are dispersively placed in the error correction data blocks in a manner such that one decrypting information piece is assigned to one error correction data block and hence every decrypting information piece can be reproduced from a corresponding error correction data block.

According to the above features 1) and 2), every decrypting information piece can be reproduced from a corresponding error correction data block at the same time as the implementation of error correction of the error correction data block. This is an advantage provided by the above features 1) and 2). The reproduced decrypting information piece is for the decryption of encrypted data in the error correction data block. Thus, at the same time as the implementation of error correction of an error correction data block, it is possible to decrypt encrypted data in the error correction data block in response to a reproduced decrypting information piece. This is another advantage provided by the above features 1) and 2).

Kobayashi et al (US 6,665,240) disclose that encrypted information, an error correction code, and decrypting information for decrypting the encrypted information are recorded on a recording medium. However, Kobayashi et al fail to teach the above feature 2) of the inventions of the new claims 9-16.

Braitberg et al (US 6,631,359) disclose the encryption of ICM data, the use of an error correction code, and the embedding of disk identification information and access control information in the ICM area. However, Braitberg et al fail to teach the above features 1) and 2) of the inventions of the new claims 9-16.

Owashi et al (US 6,363,210) merely disclose that encrypted information, an error correction code, and decrypting information for decrypting the encrypted information are transmitted. Owashi et al fail to teach the above features 1) and 2) of the Inventions of the new claims 9-16.

Thompson et al (US 5,406,627) disclose the encryption of audio information, the addition of decrypting information to a frame of the audio information, and the use of an error correction code. Thompson et al fail to teach the above feature 2) of the inventions of the new claims 9-16.

Hoffberg et al (US 5,920,477) disclose the recording of information. However, Hoffberg et al fail to teach the above features 1) and 2) of the inventions of the new claims 9-16.

Rick et al (US 2003/0174760) disclose an error correction code, the generation of redundant data, the encryption, and the interleaving about a paging/traffic signal. However, Rick et al fail to teach the above features 1) and 2) of the inventions of the new claims 9-16.

Cooperman et al (US 5,613,004) disclose the encryption of a message, a check on the effectiveness of a message, and the dispersion of a message. However, Cooperman et al fail to teach the above features 1) and 2) of the Inventions of the new claims 9-16.

Masuda et al (US 2003/0046564) disclose the recording of information on a tape. However, Masuda et al fail to teach the above features 1) and 2) of the inventions of the new claims 9-16.

Bartlett (US 6,282,040) discloses the recording of inner and outer error correction codes on a tape. However, Bartlett fails to teach the above features 1) and 2) of the inventions of the new claims 9-16.

Park (US 5,761,302) discloses a copy prevention method used for data from a digital VCR. However, Park fails to teach the above features 1) and 2) of the inventions of the new claims 9-16.

Thus, none of Kobayashi et al, Braitberg et al, Owashi et al, Thompson et al, Hoffberg et al, Rick et al, Cooperman et al, Masuda et al, Bartlett, and Park teaches the above feature 2) of the inventions of the new claims 9-16. In addition, none of Kobayashi et al, Braitberg et al, Owashi et al, Thompson et al, Hoffberg et al, Rick et al, Cooperman et al, Masuda et al, Bartlett, and Park teaches the above advantages provided by the above features 1) and 2) of the inventions of the new claims 9-16.

In view of the foregoing, the examiner is respectfully requested to reconsider the application and pass the same to issue at an early date.

Respectfully submitted,



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It is a fifth object of this invention to provide an improved recording medium.

5 A first aspect of this invention provides a method of transmitting information, comprising the steps of encrypting input information into encryption-resultant information, combining 1) a portion of the encryption-
10 resultant information in every prescribed data interval and 2) a decrypting information piece for decryption of the portion of the encryption-resultant information in the prescribed data interval into a combination-resultant information block, adding an error correction code signal to the combination-
15 resultant information block to form an error correction data block; and outputting the error correction data block, wherein the decrypting information pieces are dispersively placed in the error correction data blocks in a manner such that one decrypting information piece is assigned to one error correction data block and hence every decrypting information piece can be reproduced from a corresponding error correction data block.

A second aspect of this invention provides a method of recording information. The method comprises the steps of encrypting input information into encryption-resultant information, combining 1) a portion of the encryption-
20 resultant information in every prescribed data interval and 2) a decrypting information piece for decryption of the portion of the encryption-resultant information in the prescribed data interval into a combination-resultant information block, adding an error correction code signal to the combination-
25 resultant information block to form an error correction data block, and recording the error correction data block on a recording medium, wherein the decrypting information pieces are dispersively placed in the error correction data blocks in a manner such that one decrypting information piece is assigned to one error correction data block and hence every decrypting information piece can be reproduced from a corresponding error correction

data block.

A third aspect of this invention provides a method of recording information. The method comprises the steps of encrypting input audio visual information into encryption-resultant information, combining 1) a portion of the encryption-resultant information in every prescribed data interval and 2) a decrypting information piece for decryption of the portion of the encryption-resultant information in the prescribed data interval into a combination-resultant information block, adding an error correction code signal to the combination-resultant information block to form an error correction data block, and recording the error correction data block on a portion of a recording medium which corresponds to a prescribed number of tracks or sectors, wherein the decrypting information pieces are dispersively placed in the error correction data blocks in a manner such that one decrypting information piece is assigned to one error correction data block and hence every decrypting information piece can be reproduced from a corresponding error correction data block.

A fourth aspect of this invention is based on the third aspect thereof, and provides a method wherein the recording medium comprises a magnetic tape.

A fifth aspect of this invention provides a tape-like recording medium formed with slant tracks and loaded with 1) encryption-resultant audio visual information, 2) decrypting information for decrypting the encryption-resultant audio visual information, and 3) an error correction code signal added to a combination of the encryption-resultant audio visual information and the decrypting information, wherein a portion of the encryption-resultant audio visual information in every prescribed data interval and a piece of the decrypting information used for decrypting the portion of the encryption-resultant information in the prescribed data interval are combined into a

combination-resultant information block, and a portion of the error correction code signal is added to the combination-resultant information block to form an error correction data block assigned to a prescribed number of ones among the slant tracks, and wherein pieces of the decrypting information are
5 dispersively placed in error correction data blocks in a manner such that one piece of the decrypting information is assigned to one error correction data block and hence every piece of the decrypting information can be reproduced from a corresponding error correction data block.

A sixth aspect of this invention provides an apparatus for transmitting
10 information. The apparatus comprises means for encrypting input information into encryption-resultant information, means for combining 1) a portion of the encryption-resultant information in every prescribed data interval and 2) a decrypting information piece for decryption of the portion of the encryption-
15 resultant information in the prescribed data interval into a combination-resultant information block, means for adding an error correction code signal to the combination-resultant information block to form an error correction data block, and means for outputting the error correction data block, wherein the decrypting information pieces are dispersively placed in the error correction
20 data blocks in a manner such that one decrypting information piece is assigned to one error correction data block and hence every decrypting information piece can be reproduced from a corresponding error correction data block.

A seventh aspect of this invention provides an apparatus for recording
Information. The apparatus comprises means for encrypting input information
25 into encryption-resultant information, means for combining 1) a portion of the encryption-resultant Information in every prescribed data interval and 2) a decrypting information piece for decryption of the portion of the encryption-
resultant information in the prescribed data Interval into a combination-

resultant information block, means for adding an error correction code signal to the combination-resultant information block to form an error correction data block, and means for recording the error correction data block on a recording medium, wherein the decrypting information pieces are dispersively placed in the error correction data blocks in a manner such that one decrypting information piece is assigned to one error correction data block and hence every decrypting information piece can be reproduced from a corresponding error correction data block.

An eighth aspect of this invention provides an apparatus comprising means for encrypting input information into encryption-resultant information, means for combining 1) a portion of the encryption-resultant information in every prescribed data interval and 2) a decrypting information piece for decryption of the portion of the encryption-resultant information in the prescribed data interval into a combination-resultant information block, means for adding an error correction code signal to the combination-resultant information block to form an error correction data block, wherein the decrypting information pieces are dispersively placed in the error correction data blocks in a manner such that one decrypting information piece is assigned to one error correction data block and hence every decrypting information piece can be reproduced from a corresponding error correction data block.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a block diagram of a recording apparatus according to a first embodiment of this invention.

Fig. 2 is a diagram of the format of one recording track on a